A New Genus, eight New Species, seven New Forms, and Notes on the Lepidoptera of Saudi Arabia, Bahrain, and Iran[1]

BY

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(*With* 4 *plates and* 3 *text-figures*)

The previous article in this taxonomic series dealt mainly with Afghanistan and appeared in *Beitrage zur Naturkundlichen Forschung in Sudwestdeutschland* (Karlsruhe) (Bd. **19**. H. 3, 1961). The present deals with Lasiocampidae, Nolinae, Lymantriidae, and principally Noctuidae-Quadrifinae from Arabia, Bahrain, and Iran.

The Saudi-Arabian material was mostly collected in Riadh by Dr. E. Diehl (ED) or in the Eastern Province by A. S. Talhouk (T) for the Bavarian State Zoological Museum (ZM). (In brackets are the abbreviations by which these names will be referred to below.) Some material from Kuwait in my own collection (EW) and from Saudi Arabia in the British Museum (BM) taken by Messrs. D. V. Fitzgerald (DVF), S. Gibbons (SG), McEwan (McE), A. R. Waterston (ARW) and H. St. J. Philby (P), has also been included, together with a few forms from the Hadramaut taken by Mr. G. Popov (GP).

The Bahrain material has been quite recently collected in the island-state of Bahrain, which is only separated by a sea-strait of about twenty miles from the Eastern Province of Saudi Arabia, by L. Aircraftsman D. Rush (DR) and myself (EW). This appears to be the first material from this island, which lies north of the Tropic.

The Iranian material was in part collected by me between ten and twenty-five years ago, and partly more recently for the Stuttgart State Museum (SM), by Herren Richter and Shauffele (RS) or Richter alone (R).

I am particularly grateful to Mr. D. S. Fletcher of the British Museum and to Monsieur Charles Boursin for their aid to me in my researches; also to Messrs. W. H. T. Tams, P. Viette; also Dr. B.

[1] This is the XVIth article in this taxonomic series on the Middle East Lepidoptera. Part XVth appeared in the *J. Bombay nat. Hist. Soc.* **55** (2) : 228-37.

Alberti, and the Stockholm Natural History Museum for the kind loan of some important types.

Family LASIOCAMPIDAE

Beralade gibbonsi Wilts. (comb. nov.)

Lambessa gibbonsi Wilts., 1947, *Bull. Soc. Fouad Ier Ent.* **31**, Plate Fig. 1.

This species, usually pure white, must be transferred to *Beralade* (which is closely related to *Chilena*); a good series (P) exists in the BM., all except one having the hindwing nervures 4 and 5 stalked as in these two genera, but one having them connate as in *Lambessa*. The interesting aberration described below reveals clearly the affinity to *Beralade* rather than *Lambessa* as its grey markings are oblique as in the former genus. Of the white forms from Arabia in the BM., only one example reveals traces of this oblique forewing stripe; the original *gibbonsi* type did not show it. However, a ♂ labelled Riadh 1-iii-58 (ED) shows traces of it. The species resembles *pura* Roths. superficially.

grisescens ab. nov. (Plate I, Fig. 4)

Forewing, with a faint grey-brown oblique straight line from the apex to the middle of the hind margin, but reaching neither, and a second, similar but fainter line from the margin below the apex to near the tornus, and with very slight grey powdering along the costa and termen; on the hindwing, a weakly-defined, grey broad marginal border runs from below the apex to the anal angle. Forewing underside, with a grey-brown marginal shade, and with the termen weakly (but more strongly than on the upper side) defined in grey; hindwing, with a similar but less extensive marginal shade, absent from the costa.

Holotype: ♂, Saudi Arabia, Hayir, 27-i-60, ED, ZM.

Note on affinities of *gibbonsi:* Mr. W. H. T. Tams has kindly examined the genitalia of *gibbonsi* from Arabia and of *pura* Roths. from N. Africa and found differences justifying considering them distinct species.

Family ARCTIIDAE

Subfamily NOLINAE

Celama harouni Wilts. **dilmuna** subsp. nov.

The Bahraini race, here named after the ancient name of this island (Dilmun) in Sumerian times, has a more grey-infused, cooler

brown hue than the typical form of Iraq (described in *J. Bombay nat. Hist. Soc.* **49** (4) : 653-4, 1951); the latter extends into Lebanon and Persia. In some Bahraini examples, especially those flying in the desert, where however it is rarer than on oasis-ground, the forewing ground-colour is more whitish and contrasts strongly with the dark bands and scale-patches; this has not been noted in the typical form, but occurs in some examples from Saudi Arabia, Nejd, Riadh (ED) which have the warmer brown coloration of the typical form.

Holotype: ♂, allotype ♀, and three paratypes ♂♀, Bahrain (oasis), 12-ii-61, EW.

Other paratypes: same locality, different dates: 26-xii-59, 9-i-60, 26-i-60, 23-ii-60, 16-iii-61, 16-iv-61, and seven examples bred ex ovo hatched 11-14-v-61 (EW); also other examples from Bahrain (DR) in BM.

The larvae ex ovo fed on *Prosopis stephaniana* and on one or two species of trefoil; fuller details will be given in a later article devoted to larval descriptions and photographs.

The humid maritime climate, with negligible rainfall but heavy dews, of the island of Bahrain may be responsible for a tendency for the lepidoptera there to form races distinguished from the mainland forms by cooler, darker colouring, often verging on melanic, and in some cases smaller size. The melanic tendency is very marked in the Bahrain race of the Noctuid *Cerocala sana* Stgr., and the small size characterises the desert Noctuid *Scotia sardzeana* Brandt the Bahrain form of which is not different in colouring from the typical.

I refrain however from giving these island races new names in the present article, because, in the first case, *sana* is very variable both on the island and on both shores of the Persian Gulf, and in the second case, because I have never thought fit to name a form whose only distinction from others is its small size.

Family LYMANTRIIDAE

Euproctis cervina Moore

Synonyms : *E. pusilla* Moore
E. pygmaea Moore, praeoccupatum by *pygmaea* Walker
dana Swinh. syn. nov.
(nec *pygmaea* Walker)

This species is widespread in N. India and is now proved to occur north of the Tropic in the Persian Gulf. According to Mr. D. S. Fletcher, who has kindly examined the BM. material for me, it is distinct from *E. varians* Walker which is widespread in SE. Asia.

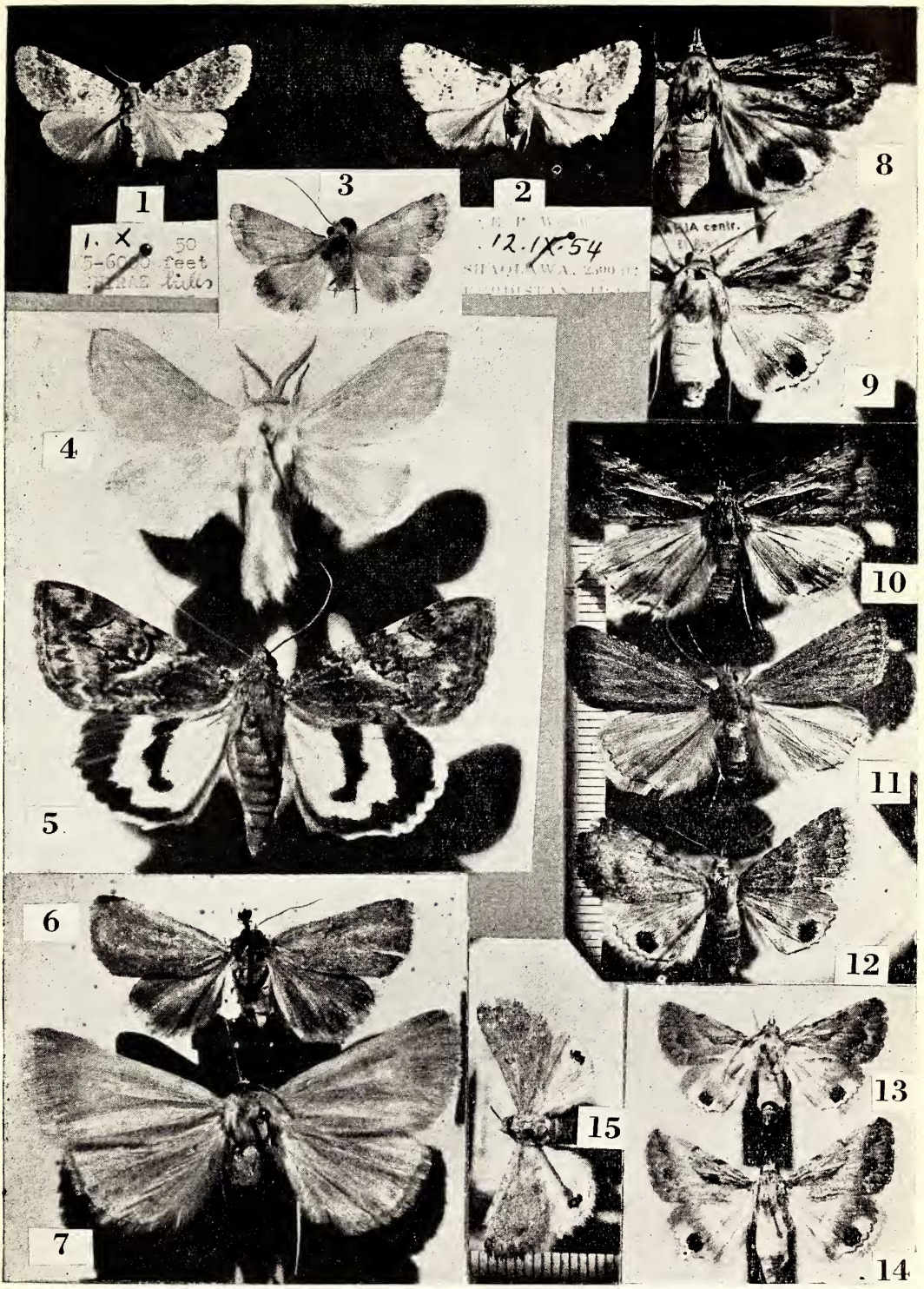


Fig. 1. *Victrix sassanica* sp. nov. (SW. Iran); Fig. 2. *Victrix tabora* Stgr. (N. Iraq); Fig. 3. *Armada fletcheri* sp. nov. (SW. Iran); Fig. 4. *Beralade gibbonsi* Wilts. *grisescens* ab. nov. ♂ (Arabia); Fig. 5. *Catocala timur* B.-H. *richteri* subsp. nov. (S. Iran); Fig. 6. *Cryphia polyphaenoides* sp. nov. ♀ (Bahrain); Fig. 7. *Lygephila fereidun* sp. nov. ♂ (N. Iran); Figs. 8, 9. *Anumeta asiatica* sp. nov. (8 : S. Iran, 9 : Arabia); Figs. 10, 11. *Anumeta arabiae* sp. nov. (Arabia); Fig. 12. *Anumeta sabulosa* Roths. (Arabia); Figs. 13, 14. *Anumeta asiatica* sp. nov. (Arabia) (× 5/7); Fig. 15. *Anumeta atrosignata* Walker ♂ (Arabia).

(All enlarged except figs. 13 & 14)

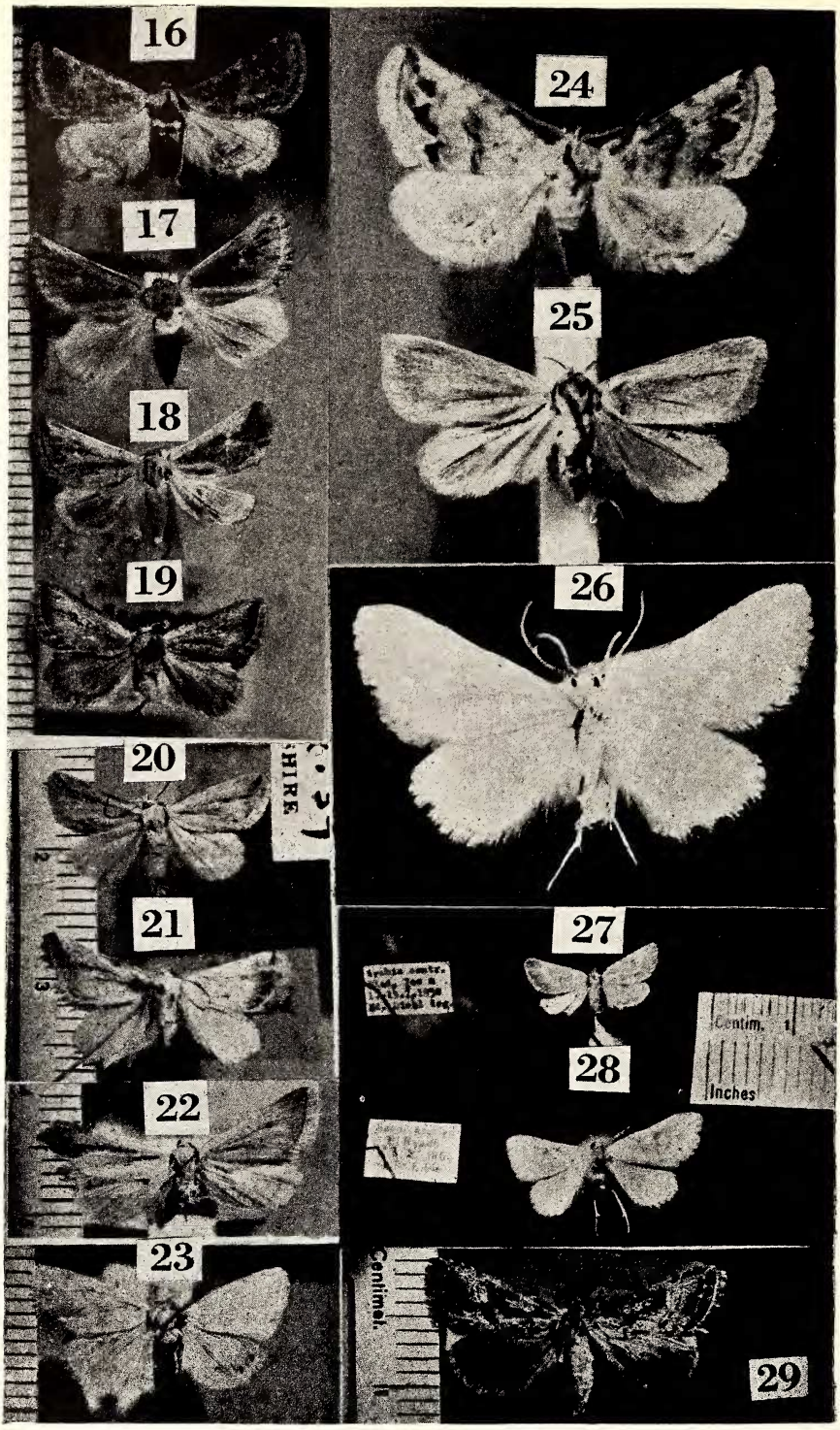


Fig. 16. *Porphyrinia rushi* sp. nov. ♀ (Bahrain) ; Figs. 17, 18. *Porphyrinia bistellata* sp. nov. (Bahrain) ; Figs. 19-21. *Porphyrinia pallidula* H.-S. *khalifa* subsp. nov. (Bahrain) ; Fig. 22. *Porphyrinia pallidula* H.-S. *khalifa* subsp. nov. (SW. Iran) ; Fig. 23. *Riadhia diehli* sp. nov. ♀ (Arabia) ; Fig. 24. *Porphyrinia rushi* Wilts. *frigida* ab. nov. (Bahrain) ; Fig. 25. *Porphyrinia bulla* Swinh. ♀ (Bahrain) ; Figs. 26, 28 *Antarchaea pyralomima* sp. nov. ♂♂ (28 = holotype) (Arabia) ; Fig. 27. *Riadhia diehli* sp. nov. ♀ (Arabia) ; Fig. 29. *Hypenodes orientis* Brandt *richteri* subsp. nov. (S. Iran).

(Figs. 16-23 : × 2 , 24-26 : × 3 ; 27, 28 : × 12/10)

I select as lectotype of *varians* Walker a ♀ from Foo-chow seen by Walker in the British Museum.

Probably *E. charmotanti* Vuillot (Seitz II, Pl. 21, i) is a N. African race, if not a further synonym, of *cervina* Moore.

E. cervina Moore inhabits Bahrain and is there locally common on oasis ground; it may well inhabit the Batina region of Oman and perhaps Qatif and Hofuf, Saudi Arabia.

The first generation flies in Bahrain in mid-March and is larger than the following generations, and often distinguished by grey-infused hindwings; the second flies in late May. A third generation flies in late summer, and is, to judge from a single representative available, the smallest and palest: its span is only 18 mm. No female has been taken yet, but the males are readily attracted to light after dark, or may be taken flying in well-watered date-palm groves at dusk.

The male genitalia of Bahrain *cervina* are illustrated in two figures (Plate III, Figs. 1, 2) herewith, as this may assist students of doubtful *Euproctis* in Africa and Asia; it should however be mentioned that the tail-parts are very three-dimensional and become distorted into variable positions under a cover-glass; this explains the apparent discrepancies between the two figures.

Family Noctuidae

Subfamily Trifinae

Victrix sassanica sp. nov. (Plate I, Fig. 1)

Close to *V. tabora* Stgr. (=*Bryophila tabora*) and more easily distinguished therefrom in the male than the female. The male antenna is more ciliated; the genitalia also differ. Both species have variable but confused markings; the new species is usually darker, with more lead-grey infused forewing than *tabora*; it inhabits the Southern Zagros whereas *tabora* inhabits the Northern Zagros and Anatolia.

Span: 24-29 mm.

Male antenna, with ciliations as long as breadth of shaft; whereas in *tabora* it is only slightly setose.

Male genitalia (see Plate III, Fig. 4); the valve is shorter and slenderer than in *tabora* (Plate III, Fig. 3), but with a more pronounced costal spine at the tip; in the proportionately longer aedeagus, the cornutus is of similar form but slighter than in *tabora*.

Holotype: ♂, (prep. 1133), SW. Iran, Fars, Pireh-Zan, *c.* 7000 ft. (*c.* 2100 m.), 1-ix-40, EW. (in coll. m.)

Allotype: ♀, (prep. 1133), SW. Iran, Fars, Kazerun, *c.* 3000 ft. (*c.* 900 m.), 4-x-50.

Paratypes: 1 ♂ and 7 ♀♀, same data as holotype; also Fars, Shiraz, 5000-6000 ft. (*c.* 1500-1800 m.), 18-ix-40, and 30-ix & 1-x-50, EW. (in coll. m.).

This species inhabits hilly steppe and dry mountain sides, whether deforested or wooded, the same is true of its relative *tabora* Stgr. (Plate I, Fig. 2). Both are univoltine autumnal in flight, as is the case with the closely related *marginelota* which inhabits Middle Heights of the Lebanon. Probably this ecology and phenology characterises the whole genus, which has previously been treated as *Cryphia* (*Bryophila*) and *Oedibrya* Hamps. [see Boursin, 1961, *Beitr. naturk. SW-Deutsch.* **19** (3)].

Subfamily QUADRIFINAE

(?) Cryphia polyphaenoides sp. nov. (Plate I, Fig. 6)

From all *Cryphia* (*Bryophila*) and related genera easily distinguishable by its coloration: pale grey forewing and dull orange hindwing.

Head and thorax, with neatly adpressed slate-grey, white-edged scales, giving it, under magnification, a smoother aspect than the foregoing and most other *Cryphia* species. Palps otherwise similar. Frons, bulging in a slightly more rectangular form.

♀ antenna, ciliate.

Forewing, comparatively wide and square, but in proportion to the hindwing, similar to other *Cryphia*; pale slate-grey, with faint darker yellowish grey markings mainly in the cell between the stigmata, before the submarginal line, and on the termen. Reniform and orbicular stigmata, vaguely paler; submarginal line, pale and wavy; termen, a series of faint dark spots; other markings, obsolete; fringes grey.

Hindwing, dull orange-brown, infuscated submarginally; fringes dull yellow, chequered with grey.

Undersides, much paler, the forewing being more yellowish than on its upper side and thus less distinct from the hindwing in general colouring.

Span: 30 mm.

In the absence of a male there must remain some doubt whether the generic attribution to *Cryphia* is right.

Holotype: ♀, Bahrain, Adari Pool Gardens, 23-ii-60, EW (in coll. m.)

This appears to be an oasis moth. Lichens and algae (on which *Cryphia* feed) are found on desert vegetation in Bahrain, despite the

low rainfall, doubtless because of the heavy dews and humidity; but no *Cryphia* species has been taken in the desert there.

Porphyrinia rushi sp. nov. (Plate II, Figs. 16, 24)

A third species in the *P. leucota* Hamps.-*nives* Brandt group, differing from them in habitat and phenology; less white than *leucota*, smaller and with a more crooked but less oblique median-band than *nives*. Probably the Sinai (U.A.R.) form in this group really belongs to *rushi*, not *nives*.

Antenna of ♂, ciliated, with cilia about as long as breadth of shaft; of ♀, simple.

Palp, second joint with pink-brown adpressed scales; third joint, short.

Tongue, fully developed.

Thorax, grey; abdomen, whitish grey.

Forewing whitish marked with slate-grey and orange-brown, or (ab. *frigida* ab. nov.) deep olive-brown. The latter form seems to be due to wet cool weather, and lacks the more normal orange-brown tints; the one example of it which I possess is strongly contrasted, with white and dark grey forewing, rather like *nives*, except that the distal edge of the median band has three irregularly prominent angles; in *nives* these angles are all equally prominent, but in *rushi* the second, on the cell, exceeds the others, thus giving the new species a less straight median band. This band is at right angles to the hind-margin, whereas in *nives* it is oblique. In less strongly marked forms than ab. *frigida* the differences in the median band are not always distinct but in all forms a further criterion is the course of the sub-marginal line, which in *nives* is acutely inward-angled on nervure 2 only, but in *rushi* is more roundly-indented on both nervures 2 and 3.

There are sometimes two black cell-spots representing the orbicular and reniform stigmata of the forewing; the latter spot is placed distally of the median band.

The basal area of the forewing is mixed with white, grey, and usually orange. The ante-median fascia is grey, suffuse, zigzag, followed immediately by the broad cental band which in the normal form is orange-brown. Between it and the wavy, not zigzag, mauve-grey post-median fascia, is a suffused pale slate-grey area; beyond this fascia is an area, wide at the costa, and narrower at the hind margin, orange-brown, or, in ab. *frigida*, deep olive-brown, bordered distally by a wavy white submarginal line, against which, in the bays formed by the mauve-grey submarginal area, are placed a few fine

black spots, variable in number. The grey submarginal area reaches the costa and the hind-margin. Termen, variable, a rather faint pale line, sometimes with a clear wavy brown proximal edge, and always with grey distal spots on the fringe at the nervures, usually producing a grey-chequered fringe with a fine white distal line. Fringe, pale brown distally.

Hindwing, pale whitish, with an almost obsolete grey median band and two parallel distal bands, sharply angled on nervure 2. In ab. *frigida* the cell is infuscated, also nervures 1 and 2 basad. Termen, fine, grey. Fringe, grey, with a white basal line.

Underside, dirty whitish.

Span: 17-22 mm.

Genitalia, ♂, (Plate III, Fig. 5). With uncus and aedeagus as in *leucota* and *nives*. The three species differ in the development of the harpe, which consists of a tongue-like sclerotised projection above a setose angular process, and is widest and longest in *nives*, narrower and shorter but still projecting beyond the process in *leucota*, shorter and hardly projecting in *rushi*.

♀, posterior, apophyses comparatively long and slender, anterior, comparatively short and spatulate; ostium, weak; ductus, chitined above the twist; bursa, with a small field of internal spinules in the central-upper (distal) part, extending over less than half the circumference, (Plate III, Fig. 6)

Holotype: ♂, (Prep. 1064) Bahrain, nr. Amar, southern desert, 27-ii-60, DR. (in coll. EW).

Allotype: ♀, Bahrain, same locality, 24-iv-60 (EW).

Ab. *frigida* type: ♂, Bahrain, Sakhir desert, 14-iii-61 (EW). (Plate II, Fig. 24)

Typical paratypes: ♀, same data as holotype, DR, in BM.

Saudi Arabia, Eastern Province, ♀ (Prep. WM. 139) Hofuf, 25-ii-57. T., and ♂, ditto, 15-iii-57, T. (ZM).

In Bahrain this species is a univoltine vernal species inhabiting limestone desert with a slight sand cover in places, the vgetation consisting of grasses and a rather varied association (*Lycietum-Helianthemetum*).

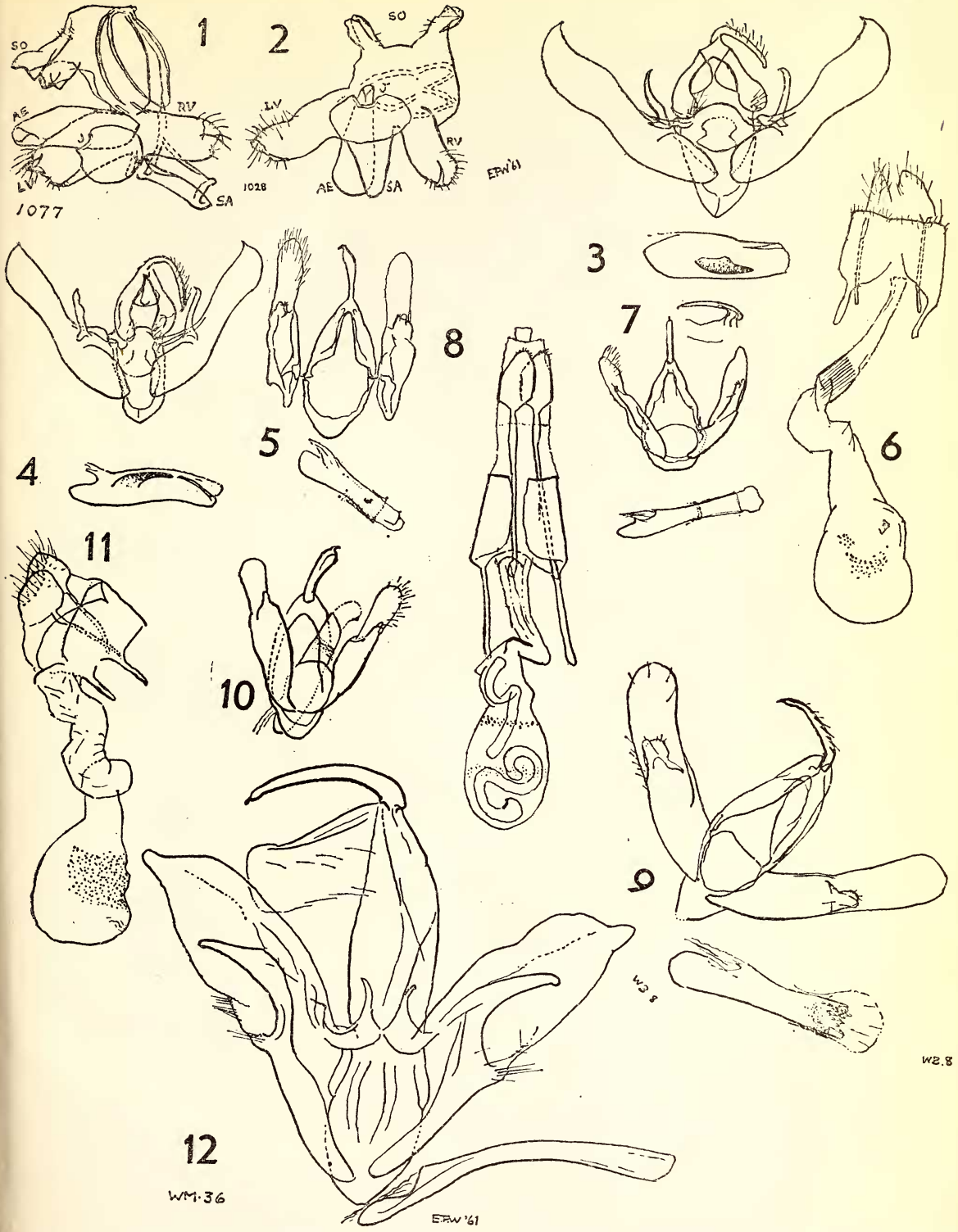
Porphyrinia bistellata sp. nov. (Plate II, Figs. 17, 18)

Antenna, of ♂, strongly ciliated; of ♀, sparsely ciliated.

Tongue, absent or vestigial.

Thorax, grey; abdomen, light grey.

Forewing, with straight costa, fairly pointed apex, and semi-circular outer margin, paler or darker slate-grey, occasionally streaked narrowly



Figs. 1, 2. *Euproctis cervina* Moore. ♂ genitalia (× 23) two views : 1 : with tegumen viewed laterally, 2 : with tegumen viewed ventrally. (AE = aedeagus ; LV = left valve ; J = juxta ; RV = right valve ; SA = saccus ; SO = socii, on tegumen) ; Fig. 3. *Victrix tabora* Stgr. ♂ genitalia (× 15), open ventral view aedeagus separated ; Fig. 4. *Victrix sassanica* sp. nov. ♂ genitalia (× 15), open ventral view with aedeagus separated ; Figs. 5, 6. *Porphyrinia rushi* sp. nov. genitalia (× 15): 5 : ♂, open ventral position with valves semi-detached and aedeagus separated ; 6 : ♀ ventral view ; Figs. 7, 8. *Porphyrinia bistellata* sp. nov. genitalia (× 15): 7 : ♂, open ventral position with aedeagus separated, and uncus also shown in lateral position on right; 8 : ♀ ventral view ; Fig. 9. *Porphyrinia pallidula* H.-S. race *cypriaca* Stgr. Type ♂ genitalia (× 23), open ventral position with aedeagus separated ; Figs. 10, 11. *Porphyrinia bulla* Swin. genitalia (× 15): 10 : ♂, ventral view, left valve shut, right valve open ; 11 : ♀, ventral view ; Fig. 12. *Catocala timur* B.-H. *richteri* subsp. nov. ♂ genitalia (× 15), ventral open position, with aedeagus separated.

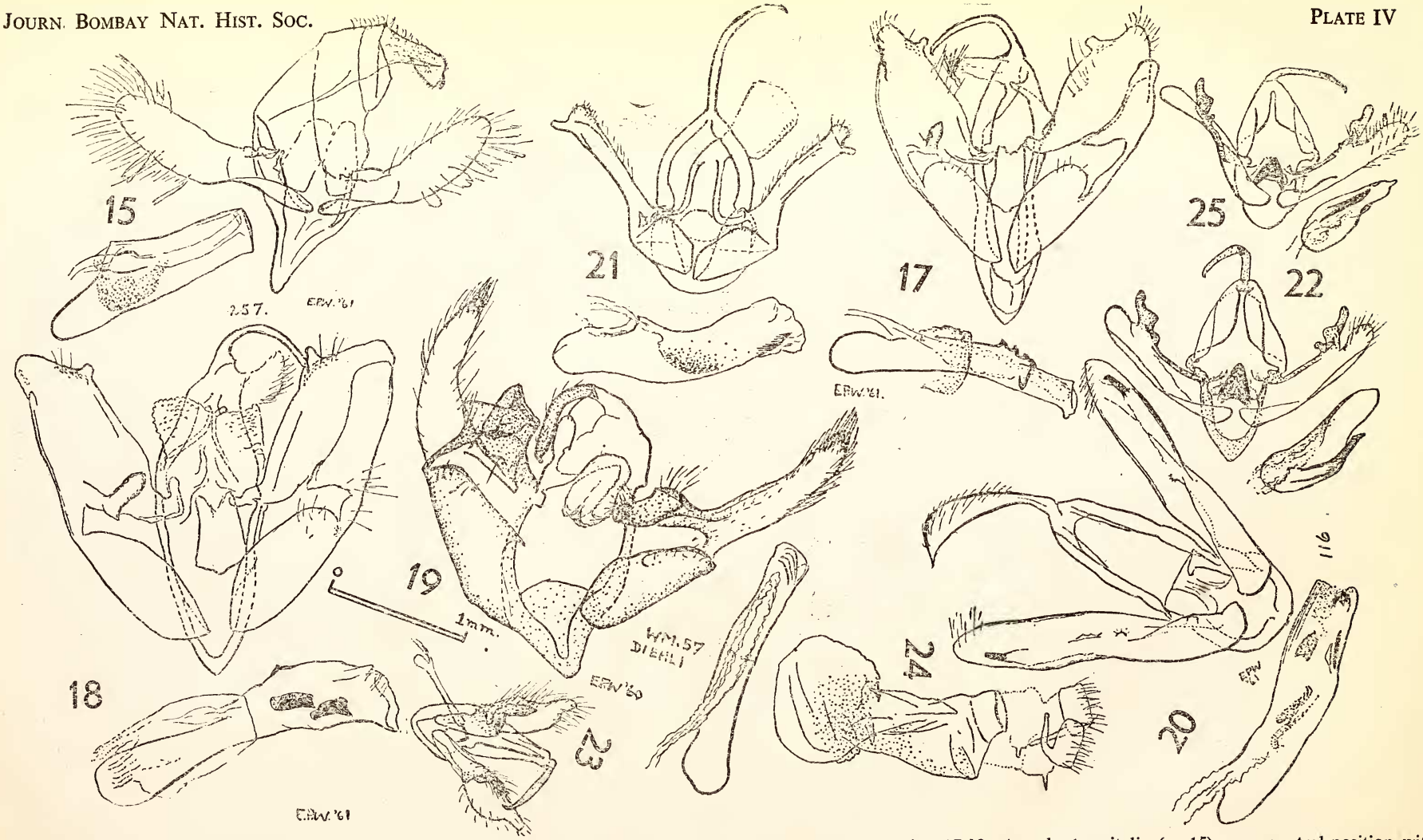


Fig. 15. *Anumeta arabiae* sp. nov. ♂ genitalia (× 23), open ventral position with aedeagus separated. Figs. 17-18. *Armada* ♂ genitalia (× 15), open ventral position with aedeagus separated: 17 : *fletcheri* sp. nov. 18 : *dentata* Stgr. (Type). Fig. 19. *Riadhia diehli* gen. nov., sp. nov. ♂ genitalia (× 23), open ventral position, with aedeagus separated, Fig. 20. *Lygephila fereidun* sp. nov. ♂ genitalia (× 15), open ventral position with aedeagus separated; Fig. 21. *Antarchaea pyralomima* sp. nov. ♂ genitalia (× 23), ventral open position with aedeagus separated; Figs. 22-25. Hypeninae genitalia (× 15) : 22 : *Rhynchodontodes orientis* (Brandt) *richteri* subsp. nov. ♂, ventral open position with aedeagus separated; 23 : *Hypenodes* (*Schrankia*) *balneorum* Alph. ♂, ventral view, with left valve shut, right valve open; 24 : *Rhynchodontodes orientis* (Brandt) *richteri* subsp. nov.

with paler colouring along the costa; in one exceptionally light example (from Hofuf) a light brown tint invades the whole wing replacing the grey, but usually only the submarginal area is light tawny brown. Termen, a brown line, sometimes black-spotted on the nervures, with a white distal edge at the base of the fringe, which is grey-brown. Reniform stigma, represented by two diffuse, whitish star-like points, placed one above the other, and often united. A black oblique apical streak is continued in an almost straight line to near the tornus, sometimes as an interrupted series of black intra-neural spots; even in the pale brown form, this oblique streak is indicated in darker brown.

Hindwing, paler costad and basad, dull grey; fringe, slightly paler.

Underside, pale grey with a brassy metallic sheen, more yellowish on the costa; apex and fringe, usually darker brown.

Span: 14-25 mm. (but nine out of ten are between 19-22 mm.).

Genitalia, ♂ (Plate III, Fig. 7): The uncus, in ventral view appears not to taper, having a spine-like tip protruding from an apparently roundly truncated end; but in profile or lateral view (Fig. 7 top right) this character is less pronounced. The aedeagus is without even the smallest cornutus. ♀ (Plate III, Fig. 8): bursa, with two narrow bands of internal spinules, the upper (near the distal end) being narrower and with stronger spinules; the lower (just below the centre) slightly wider, less dense and with weaker spinules.

Holotype: ♂, (Prep. 1069) Bahrain, nr. Amar, southern desert, 21-iii-60, DR. (in coll. EW).

Allotype: ♀, and three paratypes, both sexes, same data, in coll. DR. in BM. & in coll. EW.

Other paratypes: 1 example, Arabia, Marrat, 6-iii-35, P. (BM.); 3 examples, (2 ♂, 1 ♀) Saudi Arabia, Eastern Province; Hofuf, 30-iii-57, T, and Abqaiq, (Prep. WM. 105) 24-iv-57, T. (ZM.). Also 12 examples, same place as holotype, 5-iv-61, and 1 ♀, 5-x-61 (EW), in coll. EW.

This new species may be placed between *pallidula* H.-S. and the African species *arenostrota* Hamps. and *penicillata* Hamps. From all of these it can be superficially distinguished by the two whitish points which none of them possess. From the *pallidula* forms, the male uncus, and the narrow central band of minute spines on the female bursa of *pallidula* subsp. *khalifa* (see below) are structural criteria. *P. pallidula khalifa* actually flies with *bistellata* in Bahrain but is commoner, less local, and has more generations; as well as lacking the

two white points, it lacks the oblique apical streak of *bistellata*. *P. penicillata* may also be distinguished by the blackening of its subcostal field and median area; *P. arenostrota* is also distinguished by a pale suffused tawny streak along its forewing median nervure, spreading as far as the submarginal area.

Porphyrinia pallidula H.-S. subsp. **khalifa** subsp. nov. (Plate II, Figs. 19-22)

From the northern subspecies, comprising the typical *pallidula* H.-S. (Transcaspia) and also the forms *cypriaca* Stgr., (Cyprus, S. Turkey, and Lebanon) (the ♂ genitalia of a type of which are shown in Plate III, Figure 9) and *griseola* Ersch. (Central Asian Mountains), I now distinguish a southern subspecies inhabiting Arabia, Bahrain and the lower elevations of south Persia. I no longer consider the latter group of forms representative of typical *pallidula* H.-S. and have renounced my intention of selecting a lectotype from among them. Instead, I propose to describe them under a new name on morphological and distributional grounds.

The new subspecies is smaller than the northern subspecies on the average; the male vesica is less spiculated; its forewing termen is usually an interrupted line. The colouring varies greatly with season and locality. It seems already possible to distinguish two races belonging to the subspecies, and perhaps when a series from more localities collected all the year round is obtained, it may be possible to distinguish more than two. At present fewer examples are available from Saudi Arabia and S. Iran than from Bahrain, which is the typical locality of the new subspecies.

Race *khalifa:* varies from whitish through pale brown and orange-brown to dark slate-grey, the darker forms appearing in winter and spring, the paler in summer and autumn, on the whole. In the darker, the termen remains a clear white line with a dark grey proximal edge interrupted at the nervures; in the paler, the proximal edge consists of a series of light brown spots. The markings are very variable; two dark cell-spots are usually marked, the reniform stigma being represented by a larger circular spot than the fine point-like orbicular; the post-median fascia is often absent even in the darker forms, and is always less clear than these two points; when marked it is outlined in smoky grey and curves round the cell and thence runs straight to about the middle of the hind-margin.

Hindwing: dirty grey-brown, rarely paler.

Span: between 12 mm. and 18 mm., the largest forms usually appearing in winter and early spring and having darker colouring.

Holotype: ♂, (Prep. 1024) Bahrain (desert), 26-ix-59.

Allotype: ♀, Bahrain same date. (Plate II, Fig. 20)

Paratypes: ♂ (Prep. 1071) Bahrain (oasis), 28-ix-59; 2 other examples, same data as holotype; 2 examples, Bahrain (desert), 5-xii-59; 1 ♂, Bahrain, Rifaa, (desert), 1-i-60; 4 examples. Bahrain, Jurdeh (desert) 19-ii-60 (one is shown in Plate II, Fig. 19); 2 examples, ditto, 17-ix-60; 3 examples, ditto, 19-ii-61; all the above were taken by myself and are in coll. m. except two which have been presented to the Zoological Museum, Humbold University, Berlin; other paratypes with similar data are in coll. m., including ♂, Prep. 1022, Plate II, Fig. 12 in my previous article (1961) and again in this article, Plate II, Fig. 21; others, DR, from Bahrain, are in BM.

Race **nejdi** f. nova

This form is slightly larger than typical *khalifa* and is more whitish and pale brown, with a tendency to grey streaking along the cell, and no trace of post-median fascia; the orbicular stigma is not marked by any black point, but the reniform is indicated by a greyish streaky cloud. The hindwing is also paler than the average typical. An oblique apical shade on the forewing is usually defined in light brown with a whitish proximal streak. The termen is light brown.

The hardly spiculated vesica makes this form belong to the Bahrain subspecies rather than the more northerly.

Span: 19-22 mm.

Holotype: ♂, Saudi Arabia, Riadh, 13-ii-60, (ED), (Prep. WM. 79), in coll. ZM.

Paratype: ♂, ditto (Prep. WM. 104) ditto.

Paratype: ♂, ditto, ix-58.

The following may belong to this race or to a third; at present the available material is insufficient for one to be sure: 1 ♂, Iran, Khuzistan, 18 km. north of Shadegan, Jarrahi River Bank district, 28-iii; 6-iv-56, R.S., in coll. S.M. (Plate II, Fig. 22) (Prep. WM. 74).

For genitalia of both sexes of this new subspecies of *pallidula* H.-S. see Figs. 14 & 18 of my preceding article; also see Plate III, Fig. 9 for Cyprus race.

As regards **griseola** Ersch., illustrated in my preceding article, I do not consider it specifically separable from *pallidula* H.-S., despite Erschoff's opinion given in his description; and indeed most European

museums have had difficulty in distinguishing these two. As I explained in the previous article, for years in the British Museum the *pallidula* forms were correctly named but under *griseola* were placed a series of *conistrota* Hamps. forms; this error however has now been corrected. In Russia, it is clear, from specimens sent recently to the British Museum as '*griseola*' emanating from Transcaspia, that the name *griseola* is there applied to a species also common in the mountains of Iran (Persia) from Elburz to North Fars; its forewing varies from yellowish unmarked to greyer with post-median fascia marked. My conclusion is that *griseola* Ersch., as originally described from a single grey specimen from the high mountains of Alai (Kokand) and another specimen from N. Persia (Astrabad), is possibly a good race of *pallidula* in Alai but elsewhere in the range of this species is a frequent aberration analogous to the darker forms of Bahrain. I have been informed by Dr. Alberti that the types of *pallidula* H.-S. (described from Syr-Daria Trans-Caspia) are no longer existent, either in Berlin or Halle; and I therefore select as lectotype of *pallidula* H.-S. the yellowish example from Nukus, Transcaspia, sent as '*griseola*' by the Leningrad Museum to the British Museum, London. This selection stabilises the two names as a conspecific unit.

Porphyrinia bulla Swin. (= **P. tomentalis** Rebel syn. nov.) (Plate II, Fig. 25)

The other common *Porphyrinia* species of the desert of Bahrain may be mentioned here, as it occurs elsewhere and its oldest name has been overlooked. It is a true desert moth but sometimes also flies in palm-gardens (oasis). It is widely distributed, as it ranges from near Karachi, whence Swinhoe described it, at least to Egypt, whence Rebel posthumously described it in 1948. The male genitalia were shown in Fig. 39 of the LEPIDOPTERA OF EGYPT (1948, EW); the uncus is characteristic and there are one or two linked minute cornuti in the aedeagus. A larger figure may be useful, and is given herewith (Plate III, Fig. 10); two convergent dorsal ridges on the uncus are responsible for its club-like aspect; their presence is not always easy to discern unless several preparations are made. Swinhoe's type has become dingy with age; however it exists in the BM., and Mr. Fletcher has kindly made a preparation of its genitalia, which are recognisable and agree with those of the Bahraini and Egyptian forms. The ♀ genitalia are characterised by a wide field of small spicules inside the bursa; this field does not however extend round

the whole circumference; the posterior apophyses also are more than twice as long as the anterior (see Plate III, Fig. 11). The moth varies greatly in size and facies; a few summer and autumn forms may have plain glossy white or yellow forewings; but most commonly, and especially at other seasons, slightly striated forms, of a powdery or sandy appearance are to be taken; these have one or two black spots in the forewing cell usually and sometimes are peppered submarginally with black or grey scales between the nervures. The termen is never defined and there are no cross-lines. Two examples from Riadh (ED, ZM): ♂, 3-ii-58, Prep. WM. 86 and ♀, 11-iii-58 (Prep. WM. 107) have been taken and show that this moth inhabits Saudi Arabia, as indeed was to be expected once its synonymy with *tomentalis* Rebel from Egypt was established.

Catocala timur B. H. **richteri** subsp. nov. (Plate I, Fig. 5)

The forewing agrees perfectly with British Museum's series of *timur* Bang-Haas (Transcaucasia), but the hindwing is paler pink, with an orange tint, and not (as in typical *timur*) pink as in *C. puerpera* hindwing; another difference in the hindwing is that the apical pale patch (outer edge of the black border) is more pronounced; in fact the hindwing is almost exactly the same as in *C. neglecta* Staud. but the forewing is quite different from that.

The genitalia of the male are shown in Plate III, Fig. 12.

Holotype: ♂, (Prep. WM. 36), allotype ♀, and paratypes 23 ♂♂ and 3 ♀♀, S. Iran. Iranshahr, 800 m., 12-iii – 30-iv-54, R. (in coll. S.M., ZM, EW).

Anumeta asiatica sp. nov. (Plate I, Figs. 8, 9, 13, 14)

This large and handsome form is closely related to *spatzi* Roths. 1915 and *major* Roths. 1913 and perhaps is no more than a subspecies of one of them, if in fact they are distinct. Owing to uncertainty on this point, I introduce the new form as a separate species, provisionally.

The type of *major* is a ♀ and there are no topo-typical ♂♂ in the British Museum collections. The type of *spatzi* is a ♂; there is in the Tring Museum a ♀ attributed to *spatzi*; this proves to have similar genitalia to the *major* type, according to Mr. D. S. Fletcher, who kindly investigated the typical material.

The Arabian-Iranian form is very variable; more material of it is availab'e than was ever taken either of *spatzi* or *major*. It resembles *spatzi* in markings, but most examples resemble *major* in size and colour. The markings which appear to me, from my own inspection

of the types, to distinguish Rothschild's two forms from one another are:

	spatzi & *asiatica*	*major*
forewing, post-median fascia	bent distally tight round cell	more gently curved distally and inwards to nervure 2
hindwing spot	compact and almost circular	more diffuse, less circular

The differences of thorax-colouring given in Draudt-Seitz do not enable one to consider the Asiatic form as one or the other, but the same author's statement that the black hindwing spot is free in *major* but in *spatzi* merges with the brown band, would indicate that *asiatica* belongs to *spatzi*.

Antenna: ♂, with cilia shorter than breadth of antenna; ♀, simple.

The forewing ground colour is white widely over-laid with yellow-brown and purple-brown scales, less widely with black. The post-median fascia is not always clearly defined. The nervures may be defined with black and white scales, and a series of intra-neural black wedges is usually present on the termen. Fringes, brown. There is a very conspicuous wedge-shaped black basal streak below the median nervure, and sometimes the median area between this and the costa is filled with black. The ante-median fascia is only clear on the costa; usually the costa is sprinkled with white between the black spots marking the post-median fascia, and the apex.

The hindwing is white, but in the ♀ this colour only appears as a 'window', narrow at the anal angle and wide at the middle of the outer margin, on either side of the black spot between the submarginal band and the termen; the rest of the wing in that sex is brown-suffused; in the ♂ the white colour also appears proximally of the wide brown submarginal band to a variable extent. Termen, wavy, brown. Fringes, white in both sexes.

Span: ♂♂, 40-45 mm.; ♀♀, 40 mm.

Male genitalia, (see Text-fig. 13): uncus, stout, very slightly arched, of uniform thickness from base to the truncate end from the middle of which projects the typical down-pointed fine tip; valve, without neck, of more or less uniform thickness, with evenly-rounded end; costa of valve, studded with many enlarged setae; near the ventral

border on the inner side, a setose ridge parallel to that border runs to the valve tip. Saccus, short. Aedeagus, sclerotised, cylindrical, the *ductus seminis* entering near the proximal end which is sub-rectangular; of uniform thickness for 2/3 of its length, then narrower for the distal 1/3. Vesica, with a chitinous plate, usually placed obliquely, shorter than diameter of the aedeagus at its broadest.

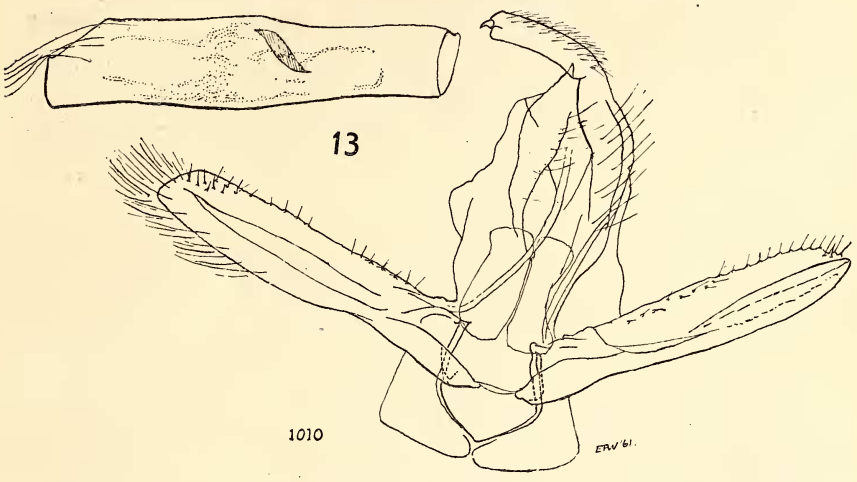


Fig. 13. *Anumeta asiatica* sp. nov. ♂ genitalia (× 15), open ventral position, with aedeagus separated

Female genitalia: anterior and posterior apophyses of about same length; ostium, not sclerotised; ductus, sclerotised and widening from ostium to top of bursa, whence *ductus seminis* leads off; bursa, long, sac-like, lacking internal spines, but uniformly stippled or roughened.

Ovum: To the abdomen of one of the ♀ paratypes adhere a number of ova, due to injury; they are bun-shaped (i.e., circular in horizontal section, and semi-circular in vertical section) with strong sculpture in the form of lines convergent apicad.

Holotype: ♂, S. Iran, Khuzistan, Ahwaz, *c.* 400 ft., 26-v-38, EW, in coll. m.

Allotype: ♀, Arabia, Nejd, Riadh, xi-58, ED, in coll. Muenchen.

Paratypes: 2 ♂♂, (Prep. 1010) Kuwait, desert, 2-v-43, EW; also one ♀, same data as holotype; all in coll. m.

5 ♂♂, 4 ♀♀, Arabia, Nejd, Riadh, same date as allotype, or 2-14-vii-58, ED, in coll. Muenchen.

1 ♀, (Prep. 1010 L) same data, in coll. m.

2 ♂♂, 2 ♀♀, SE. Iran, Iranshahr, iv-54, R. (in coll. Stuttgart)

Anumeta eberti Wilts. **zaza** subsp. nov.

Of this large species, described and illustrated in the preceding article from the deserts of southern Afghanistan, a more variable form inhabits the most inhospitable wastes of southern Arabia. It resembles the typical in size and pattern elements, also in genitalia (see Text-fig. 14), but the colouring is variable, with apparent sexual dimorphism. The ♀♀ have the forewing suffused completely with sienna-brown; the ♂♂ on the other hand usually have a whitish suffusion beyond the post-median fascia against which the nervures appear darker; the post-median fascia and submarginal line are finely edged distally with paler scales and with a series of isolated white points.

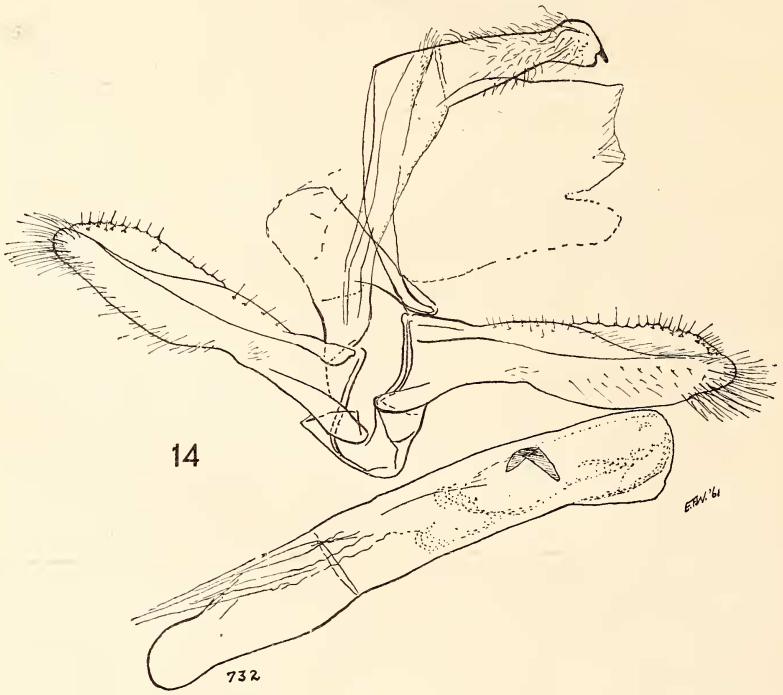


Fig. 14. *Anumeta eberti* Wilts. *zaza* subsp. nov. ♂ genitalia (× 15), ventral open position, with aedeagus separated

Holotype: ♂, (Prep. 732) South Arabia, Sawada, 12-ii-52 (Leg. G. Popov) in coll. m. (EW).

Allotype: ♀, (Prep. BM. 2976) South Arabia, Rub' al Khali, waterless part, Hadhat Hawaya, 28-ii-33, P. (BM).

Paratypes: 1 example, Hadramaut, 17.05 N., 43.30 E., Arq Zaza, ii-52 (Leg. G. Popov) and 3 examples, same as holotype, in coll. m. (EW). Also 5 examples, same as allotype, P. (BM).

Anumeta arabiae sp. nov. (Plate I, Figs. 10, 11)

This form was first taken at Hail in 1944 by A.W. and subsequently in the Dahana in 1946 by others of the Middle East Anti-locust Units under Dr. B. P. Uvarov. Examples of this first series were deposited in the British Museum and coll. m. (EW), and I reported in my article on Arabian lepidoptera of 1952 the species under the name *dentistrigata* Stgr. a central Asian species, as its genitalia (Prep. 257) did not seem to differ from Oscar John's figure of the typical *dentistrigata.*

I now feel it should be considered as a distinct species from Staudinger's; it is less robust, and more obscurely marked on the whole than the typical *dentistrigata* or than its dull, pale yellowish race, subsp. *languida* Warren. The long series (ED) shows it is very variable in colouring.

The male is the larger sex. In colour the sexes are not characterised from one another. The ♂ antenna is profusely ciliated (length of cilia twice breadth of shaft), the ♀ antenna barely setose.

Thorax and forewing, yellow-brown more or less suffused with white, black and fuscous scales. In some dull forms the general hue is dull yellow-brown slightly infused with darker grey; in these the forewing fasciae may be distinct but more often are obsolete. The black markings in some forms are concentrated to form costal spots, streaks in the cell, to delineate proximally the ante-median and post-median fasciae (which are often delineated distally with a pale edge), to darken the median area, particularly below the median nervure, to form a sub-marginal shade running from the apex in an irregularly wavy course towards the tornus, and to form a series of intra-neural terminal crescents; in the obscure forms where few of these markings stand out, black scales are scattered generally over the forewing. In some forms whitish or pale grey scales are concentrated along the cell and sub-costally almost to the apex, also to form four white costal spots beyond the post-median fascia; the median nervure in some forms is quite outstandingly pale.

Hindwing, whitish, more or less suffused with smoky brown sometimes on the disco-cellular (to form a crescent cell-spot), more often along the nervures and often also to form a variable submarginal band. Termen, brown, variable; in some forms an inner, finely wavy

dark terminal line can be seen; in others only a series of dark intra-neural spots. Fringes, whitish.

Underside whitish, usually only slightly sprinkled with grey and brown terminad; on both wings the cell-spot is sometimes indicated; termen of hindwing, sometimes marked as in forewing.

Span: ♂, 35-38 mm.; ♀, 31-35 mm.

Male genitalia (see Plate IV, Fig. 15): Proportionately small and characterised by several scent scales attached to each valve, some being remarkably broad. Uncus, short, slightly arched, stout with fine down-turned tip, slightly constricted in the centre, the tip projects from about the middle of the truncate end of the uncus; valve, with a more sclerotised basal neck, thereafter wider and of uniform thickness and less sclerotised, with regularly rounded end. The larger setae of the valves are not concentrated or numerous; two or three widely-spaced enlarged setae are placed along the middle of the inner surface of the valve in a row parallel to the costa; some others, slightly smaller, are on the ventral border. Sacculus, deep, tapering. Aedeagus, cylindrical but enlarged immediately distally of the entry of the *ductus seminis*.

Female genitalia: Posterior and anterior apophyses of about equal length. Ostium, membranous; ductus bursae sclerotised near ostium. Bursa, membranous, long-oval, without signum but with a central field of internal minute spines reaching to the bottom, anterior, end, but not extending over the whole circumference.

Holotype: ♂, (Prep. 257) Arabia, Nejd, Dahana, Awania, 19-ii-46 (McE) in coll. British Museum, London.

Allotype: ♀ central Arabia, Nejd, Riadh, xi-58, ED in coll. Muenchen.

Paratypes: 7 ♂♂ and 4 ♀♀, central Arabia, Nejd, Riadh, xi-57, i, & ii-58, ED, ZM; 1 ♂ & 1 ♀, same place and captor, 27-i and 10-iv-58, coll. mea. Also 2 ♂♂, same place and captor, summer 1958, 700 m., and 1 ♂ Eastern Arabia, Hofuf, 25-ii-57, T; ZM and 2 ♀♀, central Arabia, Riadh, 23-iii-58, & ix-58, ED, ZM. Other paratypes in coll. mea. or BM are labelled: Arabia, Hail, 17-i-44, ARW; Hinna, xi-46, McE.: and Dahana, ii-46, DVF & SG.

Anumeta atrosignata Walker (Plate I, Fig. 15 ; Text-fig. 16)

I take this opportunity to illustrate this species, which some authors, following Warren-Seitz, have wrongly regarded as synonymous with *spilota* Ersch. and *harterti* Roths. These last two are indeed very close together but *atrosignata* is not like them at all but more

resembles *A. sabulosa* Roths., and *arenosa* Brandt without being identical with them.

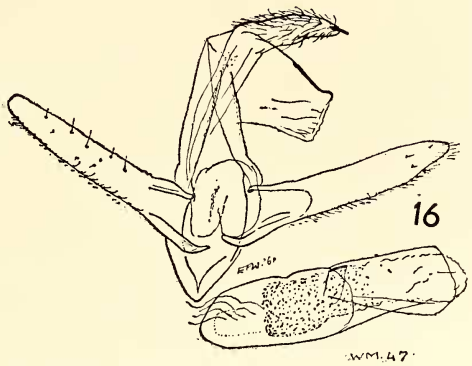


Fig. 16. *Anumeta atrosignata* Walk. ♂ genitalia (× 15), open ventral position, with aedeagus separated

Walker's type of *atrosignata* from India still exists in the British Museum which also possesses a similar example from Arabia. Now a further Arabian example has come to hand, taken at Riadh, xi-58, ED, Prep. WM. 47, and is here illustrated.

A. sabulosa Roths., a more strongly marked and darker species, was also taken at Riadh, 21-vii-58, ED, ZM, (Plate I, Fig. 12).

A revised list, therefore, of the *Anumeta* species of Arabia is as follows:

A. asiatica Wilts.
A. eberti zaza Wilts.
A. arabiae Wilts.
A. atrosignata Walker
A. sabulosa Roths.
A. cestis Men., Nejd & Jebel Shammar, ii-iii-46, DVF & SG, in coll. mea.
A. straminea B.-H., Riadh, xi & xii-59 & 1-i-60, ED, ZM.
A. surcoufi Dumont, Riadh, 28-iv-59, ED, ZM, Hadramaut, leg. Popov, coll. mea.
A. fractistrigata Alph., Nejd & Jebel Shammar, ii-iii. 46, DVF, & SG, coll. mea.
A. spilota Ersch. (? f. **harterti** Roths.), Riadh 18-iii-58, ED, ZM; Abqaiq, 6-iv-57, T, ZM ; Trucial Oman & Bahrain, EPW.

It is not yet possible to give a final opinion on the status of these last two names.

Armada fletcheri sp. nov. (Plate I, Fig. 3)

Smaller, more uniformly rosy-brown than the generotype *Armada dentata* Stgr., to which its male genitalia show it is closely related. Only one example is known, and the forewing of this lacks the infuscated median area, edged with black fasciae and boldly contrasting with the white area on either side, typical of *dentata,* but this criterion may be unreal and due to rubbing. Instead of two fasciae the hind margin shows traces only of a single cross band, apparently representing the median shade. Submarginal line, with black denticulations, much as in *dentata.* Hindwing, similar to *dentata,* but band and cell-spot weaker and more suffused. Until a better preserved example is taken the species must be distinguished principally by its genitalia.

Span: 21 mm.

Male genitalia: the characteristics which *dentata* and *fletcheri* have in common are a normal, slender uncus, with pointed tip; a juxta longer than wide, wider at its base, or proximal border which is obtusely angled; assymmetrical valves of more or less equal size, with a symmetrical small digitus on the costal extremity, and an assymmetrical thumb-shaped harpe (on left valve only); the extension of the sacculus is more developed on the right valve; an aedeagus with a distally sclerotised dorsal wall, the sclerotisation being differently developed in the two species but in both tending to form thorn-like excrescences. The new species differs in the form of the valve end (as illustrated in Plate IV, Figs. 17, 18), in the smaller harpe, and particularly in the aedeagus of which the dorsal sclerotisation forms three thorns close to the tip, while in *dentata* there is only one thorn, further back (i.e. more proximal) and less sharp; in *dentata* there are two internal chitinous plates of equal size, almost of cornutus-form, while in the new species there is nothing of the sort.

Holotype: ♂, SW. Iran, Khuzistan, Ahwaz, [*c.* 200 ft. (60 m.)], 21-x-38, EW.

A revision of the genus *Armada* and its related genera based on the characters of the male genitalia is in preparation and will, it is hoped, appear shortly. This group of genera may be called a tribe: Armadini, and the new genus described hereunder, *Riadhia,* may be placed in it close to *Armada* and *Asplenia* Hamps. Other genera in the tribe are: *Metoponrhis* Christ., *Acrobyla* Rebel, *Epharmottomena* Johns, and their synonyms.

Riadhia gen. nov.

Frons, with low crater-like round truncated prominence enclosing a vertical process, projecting slightly at its lower end in front of the crater-rim; this keel-like process is variable in form in individuals, and in some is hollowed internally into the form of a U, the base of which is most prominent; it never however approaches the blade-like form of the keel-process inside the truncated cone of such *Armada* species as *maritima* Brandt. The legs are as in *Armada*, with short forelegs and particularly short foretibia. The male genitalia are characteristic of the new genus: the valves are strongly dissymmetrical; there is no cucullus, the valve-tip consisting of a finger-like process thickly clad with adpressed bristles. The uncus is less tapering than in *Armada*, *Metoponrhis*, etc. There is no harpe or digitus on either valve, unless the hypertrophied process projecting from the left-valve costa can be considered a harpe; the sacculus of the left valve is also hypertrophied so that the whole apparatus is twisted; the aedeagus is relatively simple, without internal cornuti or external sclerotisations. Nervulation, as in *Armada dentata* Stgr.

Type: *Riadhia diehli* sp. nov. (below).

Riadhia diehli sp. nov. (Plate II, Figs. 23, 27)

Frons, with a prominence as described above partly covered with white scales and hair.

♂ antenna, missing.

♀ antenna, simple.

Tongue, present, normal. Palp, fine, fairly short.

Thorax, white. Abdomen, yellowish white.

Forewing, white, faintly marked with pale brown, especially the reniform stigma and the submarginal area. Median area, sometimes shaded with pale brown below the cell. Orbicular stigma, sometimes clearly defined, a small brown spot; reniform stigma, fused with median shade. Sometimes a white ill-defined submarginal line can be seen, parallel to the termen, in the wide brown submarginal area; this area reaches the hindmargin not far from the tornus, but is wider at the costa, and leaves a characteristic clear white broad post-median stripe. Fringes, white.

Hindwing, white, with comparatively large pale brown cell-spot and wide pale brown submarginal border. Fringes, white.

Span: 16-19 mm.

Male genitalia, as described under genus above, and illustrated in Plate IV, Fig. 19.

Holotype: ♂, (Prep. WM. 57) (lacks left wing, all legs, and antennae), and allotype, ♀ (the legs of which are mounted on left side of slide, Prep. WM. 57) (lacks antenna): Saudi Arabia, Riadh, 18-vii-58, ED, ZM.

Paratypes: 2 ♂♂, 1♀, Saudi Arabia, Riadh, 1-15-vii-58 & 1-v-59, ED, ZM.

Lygephila fereidun sp. nov. (Plate I, Fig. 7)

The pale straw, faintly marked forewing and brown collar distinguish this species from all its congeners; its pattern comes closest to that of the Spanish species *glycyrhiza* Ramb., the genitalia of which, however, I have not yet been able to examine to see whether a real relationship exists.

Palp, pale buff.

Antenna, ♂, ciliated, with ciliations about as long as the breadth of the shaft.

Neck and collar, sienna-brown.

Thorax, abdomen, fore- and hindwings, all pale buff or dull straw, slightly more brown-tinged on the wings terminad. The only marking is the faint brown crescent-formed reniform stigma on the forewing. Vague traces of a light brown median shade appear below it.

Underside, similarly coloured but lacking the forewing stigma; however, the submarginal clouding of both wings is perhaps stronger than on the upperside, and the nervures are slightly infuscated costad and terminad.

Span: 42 mm.

Male genitalia: the thickened uncus and some other characters incline me to place this new species in a group with *lusoria* and remote from *craccae* L. The harpe, longer than that of *craccae*, is nevertheless shorter than that of *lusoria*. The vesica contains similar elements to those of *lusoria* but the proximal scobinated field is shorter and the five or six teeth on the distal chitinous lump are larger and more like cornuti than in *lusoria*. For exact details, see Plate IV, Fig. 20.

I feel obliged to mention that these and other *Lygephila* genitalia show a close relationship to those of the genera *Apopestes* and *Autophila*, transferred to the Trifinae by C. Boursin in 1940 (*Mitt. Muench. Ent. Ges.* **30**, Heft 2, p. 514). However as vein 5 from discocellular mid-way between 4 & 6 on hindwing is well defined, I do not propose that *Lygephila* should be similarly transferred.

Holotype: ♂, (Prep. 116), N. Iran, Elburz Mts. Lar Valley, *c.* 9000 ft. (*c.* 2700 m.), 5-13-vii-39 (EW).

(?) Antarchaea pyralomima sp. nov. (Plate II, Figs. 26, 28)

As the genitalia do not show marked affinity either to *Antarchaea viridaria* or *A.* (*Raparna*) *coniocephala*, this new species is introduced provisionally in this genus. It is a pale sandy species recalling, when well marked, a Pyraustine Pyralid moth. A more scantily marked example (the paratype) was for a time wrongly placed among Sterrhine Geometrids. The neuration is typical of Noctuidae-Quadrifinae.

♂ antenna, strongly ciliated; tongue, developed.

Frons, smooth, slightly bulging.

Palp, with laterally compressed scales, prominently upturned.

Tibiae, not spined.; midtibia, with a pair of terminal spurs; hindtibia with two pairs of spurs.

Forewing, neuration: 3, 4, and 5 separate but close together from lower corner of cell; 6 from corner of areole; 7 and (8 and 9) from apical corner of areole, 8 and 9 on a long stalk; 10, 11, and 12 separate.

Hindwing: 3 and 4 on a short stalk, 5 from discocellular near their origin; discocellular, distinct but weak; 6 and 7 on a short stalk.

Forewing, pale biscuit, with brown stigmata sometimes clearly defined and fainter sandy brown streaky infusion along the nervures. Orbicular stigma, a finely outlined dark brown, pale-centred oval, or absent; reniform stigma, larger, less neat, with cloudy brown centre, sometimes obsolete. The post-median fascia is vaguely outlined in sandy brown without reaching either costa or hind margin; there are no other cross-lines, but the paratype shows traces of a brown oblique median shade. Termen, slightly undulate, with six dark brown spots at the nervures, absent in the paratype. Fringe, concolorous.

Hindwing, pale biscuit, slightly more yellow-brown terminad.

Undersides, uniformly pale biscuit, unmarked.

Span: 24-25 mm.

Male genitalia: Uncus, slender, normal, with spiny tip.

Valve, narrowest in centre, basal third at least double the thickness of the rest; valve-tip, bifurcate, the ventral arm being a downward-pointing pollex, the costal portion more rounded, membranous and slightly setose. Juxta, weak, simple. Aedeagus, fairly thick, cylindrical, slightly up-curved, with a small ventral-distal sclerotisation. Vesica, finely scobinated proximally, without any cornutus. (Illustrated in Plate IV, Fig. 21.)

Holotype (Prep. WM. 106): ♂. Saudi Arabia, El Riadh, 23-ii-58 (ED) ZM.

Paratype (Prep. WM. 140): ♂, Saudi Arabia, El Riadh, 4-iii-56 (ED) ZM.

Rhynchodontodes orientis (Brandt) (nov. comb.)

(*Hypenodes orientis* Brandt, 1938)

Rhynchodontodes orientis richteri subsp. nov. (Plate II, Fig. 29)

After examining the type of *Hypenodes orientis* Brandt from Tchurum, Fars, I find it closely related to *Rhynchodontodes sagittalis* Rebel from upper Egypt, and not at all closely related to *Schrankia* (=*Hypenodes*) species such as *costaestrigalis* and *balneorum* Alph. I illustrate the male genitalia of the latter (Plate IV, Fig. 23) and of the *orientis* Brandt holotype (Plate IV, Fig. 22).

Brandt's original description was also rather misleading in describing the palp as 'quite short'; 'shorter than in most *Rhynchodontodes* species' would be more correct.

In Makran (S. Iran) a race occurs which I here distinguish by the name of its captor, Herr Richter.

The median area is less brown and less separated from the rest of the forewing's grey ground-colour; there is a white diffuse lunule distally edging the blackish crescent-formed reniform stigma, which is absent in the holotype and the rest of the typical series illustrated by Brandt.

To compare with the male genitalia of the holotype of *orientis* I illustrate those of *richteri*; the only difference appears to be the proportionately smaller and finer dimensions of the former, but this may be individual rather than racial (Plate IV, Fig. 25).

I also illustrate the female genitalia (Plate IV, Fig. 24).

Holotype: ♀, S. Iran, Makran, Tiz near Putab, 25-iii-54, RS. (SM).

Allotype: ♂ (Prep. WM. 35) and 3 paratypes, ♀♀, S. Iran, Makran, Kahuran, near Putab, 25-iii-54, RS. (SM and coll. EW) (Prep. 1057).

Paratype: ♀, Baluchistan, Iranshahr, 800 m., 28 to 31-iii-54, RS. (SM).

A provisional arrangement of the genus *Rhynchodontodes* based on similarity of facies and development of aedeagus-probe would be as follows:

(i) With probe rudimentary: *antiqualis* Hubn., and *mardinalis* Stgr. (Genitalia illustrated in the preceding article in this series.)

(ii) With probe developed but not longer than aedeagus: *orientis* (Brandt) and probably *sagittalis* Reb. (whose genitalia I have not been able yet to examine).

(iii) With probe longer than aedeagus: *ravalis* Hubn., *ravulalis* Stgr., *revolutalis* Z. (=*syriacalis* Stgr., *eremialis* Walk., *centralis* Stgr.). (Genitalia illustrated in the preceding article.) I have not examined yet the other species in the genus.

Reference

Wiltshire, E. P. (1952) : Lepidoptera recently taken in Arabia. *Bull. Soc. Fouad I.*, Ent., **36** : 135-174.